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Apparatus enabling usage of external display monitor with mobile telephone

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A method and apparatus enabling the usage of a remote display monitor for presenting display data from a mobile telephone is disclosed. A mobile telephone includes a display monitor communication function enabling the generation of a communications link between the mobile telephone and a receiver of a display monitor. The communications link enables the transmission of numeric and textual data intended to be displayed on a display associated with a mobile telephone on the larger screen of the remote display monitor. The type of data presented on the display monitor may be selectively programmed by a user.

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Description of corresponding document: **US5880732**

BACKGROUND OF THE INVENTION

1. Technical Field of the Invention

The present invention relates to user interfaces for mobile telephones, and more particularly, to the display of data associated with the mobile telephone display on an external electronic display.

2. Description of Related Art

The continued development of mobile telephone technologies, such as PCS, SMS and USSP Message Services have increased the use of graphical displays to present information to a mobile telephone user. When using these types of technologies, display data is transmitted to a mobile telephone from a base transceiver station. The display data actuates functionalities within the mobile telephone to drive a display on the mobile telephone. The display provides a visual presentation to the user of the transmitted information.

However, the small size of mobile telephones necessarily causes an associated display to be rather small. The use of a small display requires the use of small font characters or abbreviations in order to fully present visual information to the user of the cellular telephone. This makes the displayed data difficult to read or interpret. Unfortunately, the present direction of development of mobile telephones is producing smaller and smaller hand-held units. Thus, there is no way to increase the display size and readability associated therewith while still meeting the public's desire for smaller mobile telephones. Thus, there exists a need for presenting a user with a more easily readable visual display that is associated with a mobile telephone.

SUMMARY OF THE INVENTION

The present invention overcomes the foregoing and other problems with an apparatus enabling the usage of an external display monitor for the presentation of mobile telephone display information. A display monitor, such as a television set or a computer monitor, includes a receiving unit for receiving display signals from a mobile telephone. The receiver may operate according to an infrared or RF protocol. Additionally, a transmitting unit may be included with the display monitor to enable two-way communications between the display monitor and the mobile telephone.

A communications function within the mobile telephone enables the generation of a communications link between the receiving unit at the display monitor and the mobile telephone. Through the communication link, display signals from the mobile telephone are transmitted for display upon the screen of the display monitor. The communication function may further include a manual activation function for manually activating the communications link between the mobile telephone and the display monitor or may alternatively include an automatic activation function enabling the communications link to be automatically generated between the display monitor and the mobile telephone.

The monitoring communications function will further include means enabling the selection of the type of data to be transmitted from the mobile telephone for display on the display monitor, for example, SMS messages, all text, or incoming call data. Once the communications link has been established between the mobile telephone and the display monitor and the type of data to be displayed is programmed, all displayed data is transmitted from the mobile telephone to the display monitor such that the user may easily read the textual display off the display monitor screen.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention, reference is made to the following detailed description taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a block diagram of the apparatus enabling usage of an external display area for displaying mobile telephone information;

FIG. 2 is an illustration of the menu selections enabling activation of a communications link and programming of the data displayed;

FIG. 3 is a flow diagram illustrating the manual connection of a communication link between a mobile telephone and a display monitor; and

FIG. 4 is a flow diagram illustrating the automatic connection of a communications link between a mobile telephone and a display monitor.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings, and more particularly to FIG. 1, there is illustrated the apparatus for generating a communications link 5 between a mobile telephone 10 and display monitor 15 to enable the display of mobile telephone data on the display screen 20 of the display monitor 15. A base transceiver station 25 will transmit a variety of data and messages to the mobile telephone 10 through a downlink 30. This information may include alphanumeric data for display upon the phone display 35 of the mobile telephone 10. Unfortunately, due to the small size of the mobile telephone 10, the display 35 presents the data at a size that may make it difficult for the average user to easily view.

The mobile telephone 10 includes a display monitor communications function 40 enabling the generation of the communications link 5 with the monitor 15. The communications link 5 between the mobile telephone 10 and display monitor 15 is through a receiver 45 associated with the display monitor 15. In one embodiment, the display monitor 15 need only include the receiver 45. However, in an alternative embodiment, the display monitor 15 may further include a transmitter 50 enabling data transmission from the display monitor 15 back to the monitor communications function 40 of the mobile telephone 10 through the communications link 5. The transmitter 50 and receiver 45 may also be combined into a single transceiver unit.

The communications link 5 generated between the mobile telephone 10 and display monitor 15 preferably comprises an infrared (IR) communications link due to the fact that many presently existing television sets already include means for receiving IR signals from devices such as a remote control. However, other means of generating a communications link, such as RF communications may also be used, so long as the link 5 may be generated between the mobile telephone 10 and display monitor 15 in one or both directions.

The monitor communications function 40 further includes a manual activation function 55 or an automatic activation function 60 to enable creation of the communications link 5. The manual activation function 55 generates a communications link 5 with the display monitor 15 in response to user inputs from the mobile telephone 10. The automatic activation function 60 enables the communications link to be automatically generated between the mobile telephone 10 and the display monitor 15.

The low layer data transfer protocol associated with the manual activation function 55 requires user activity in order to resend unreadable/distributed data. However, a simple data link protocol using seven data bits and one stop bit would be sufficient for normal indoor operating environments where the invention would be utilized. In the case of the automatic activation function 60, a package utilizing CRC (check sums) and parity bits would prevent unreadable data from being displayed. The display monitor communications function 40 would provide the physical parameters, bit rates and emitting levels necessary to generate the communications link with standard television set parameters.

Referring now also to FIG. 2, there is illustrated the display monitor usage command menu 65 available to a user of the mobile telephone 10 enabling a display of mobile telephone information on the display screen 20 of display monitor 15. The display monitor usage command menu 65 initializes activation of the communications link 5 using either a manual activation function 55 or automatic activation function 60. Once the communications link 5 is established, the text display menu 75 enables selection of the various types of text or information which a user desires to have displayed upon the display screen 20 of display monitor 15.

monitor 15. Examples of this include all menu text 80, SMS menu text 85, all text 90, and incoming call data 95. In this manner, a user may selectively program the type of data which is going to be displayed upon the display monitor rather than having all types of display data presented.

The display monitor usage command menu 65 includes a number of commands, such as DISPLAY-- TEXT 72 for displaying text information, DISPLAY-- DIGITS 73 for displaying digits and numeric data and REMOVE-- DISPLAYED-- DATA 74 for clearing a text message from the display monitor. Each of these commands would be of a specified length and have associated parameters indicating the length of possible text message, the coding of the message, priority of the message, and a clear condition for the message.

Additionally, if the display monitor 15 includes a transmitter for responding to commands of the display monitor communication function 40, each command transmitted from the mobile telephone 10 would have an associated confirmation command indicating that the message had been received. Thus, in accordance with the previously given examples, the following confirmation commands would exist; DISPLAY-- TEXT-- CNF, DISPLAY-- DIGITS-- CNF, and REMOVE-- DISPLAYED-- DATA-- CNF.

FIG. 3 is a flow diagram illustrating the method by which the manual activation function 55 would operate the communications link 5 between the mobile telephone 10 and display monitor 15 and enable display selected types of display data upon the display screen 20. At step 100, the user enters the display monitor usage command menu 65. Upon entry into the display monitor usage command menu 65, the user may further select the DISPLAY-- TEXT command 72 which activates the manual activation function 55 and is transmitted to the display monitor 15 at step 110 according to a first communications standard for a first type of television/computer monitor. The monitor communications function 40 waits for an indication at an inquiry step 115 that the receiver 45 of the display monitor 15 has received and recognized the display monitor command. If the display monitor 15 does not recognize the initially transmitted communications standard, a next standard is accessed at step 120 and control returns back to step 110 to retransmit the DISPLAY-- TEXT command 72 using the new standard. This is necessary due to the number of different types of television and/or computer display monitors that exist and respond to different types of signaling protocols.

Once the display monitor 15 recognizes the DISPLAY-- TEXT command 72 at step 115, the display monitor 15 displays a textual message indicating that the connection has been made at step 122, and a user responds to message at step 125 by pressing a "yes" button or similar type of indication. The display monitor communications function 40 then stores at step 130 the present communication settings to enable transfer of display data over the communications link 5. The user may then select at step 135 the various types of text to be displayed upon the display screen 20 using the text display menu 75.

Referring now to FIG. 4, there is illustrated a flow diagram describing the procedure to form the communications link between the mobile telephone 10 and monitor 15 using the automatic activation function 60. Initially, the user enters the display monitor usage command menu 65 at step 140. Entry into this menu causes the automatic activation function 60 to automatically synchronize the communications link 5 with the display monitor 15 at step 145 without requiring any additional user input. Once the communications link 5 has been established and synchronized, the user is notified of this at step 150 on display screen 20 of the display monitor 15. The user may then make text display menu 75 selections at step 155 to establish the particular text or data to be displayed upon the display screen 20.

Although a preferred embodiment of the method and apparatus of the present invention has been illustrated in the accompanying Drawings and described in the foregoing Detailed Description, it is understood that the invention is not limited to the embodiment disclosed, but is capable of numerous rearrangements, modifications, and substitutions without departing from the spirit of the invention as set forth and defined by the following claims.

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Claims of corresponding document: **US5880732**

What is claimed is:

1. A system for displaying on a remote display monitor display signals from a mobile telephone, comprising:
a receiver connected with the remote display monitor for receiving the display signals to be displayed by the remote display monitor; and
a transmitter associated with the remote display monitor for transmitting data to the mobile telephone;
a monitor communications function connected with the mobile telephone for generating a communications link with the receiver to enable the display signals from the mobile telephone to be transmitted to and displayed by the display monitor, said monitor communications function further responsive to transmitting data from the display monitor.
2. The system of claim 1 wherein the monitor communications function includes means for automatically actuating the communications link in response to detection of the receiver.
3. The system of claim 1 wherein the monitor communications function further includes means responsive to a user input for actuating the communications link with the receiver.
4. The system of claim 1 wherein the communications link comprises an IR communications link.
5. The system of claim 1 wherein the communications link comprises an RF communications link.
6. The system of claim 1 wherein the remote display monitor comprises a television.
7. The system of claim 1 wherein the remote display monitor comprises a computer display.
8. The system of claim 1 further including command menu means for providing a display to the user of a plurality of commands associated with the display monitor and for enabling selective programming of, in response to user inputs, the display of data transmitted to the remote display monitor from the mobile telephone.
9. A system for displaying on a remote display monitor display data from a mobile telephone, comprising:
a receiver connected with the remote display monitor for receiving the display signals to be displayed by the remote display monitor;
a monitor communications associated with the mobile telephone for generating a communications link with the receiver to enable the display signals from the mobile telephone to be transmitted to and displayed by the remote display monitor; and
command menu means for providing a display to the user of a plurality of commands associated with the remote display monitor and for enabling selective programming of, in response to user inputs, the display of data transmitted to the remote display monitor from the mobile telephone.
10. The system of claim 9 wherein the communications link comprises an IR communications link.
11. The system of claim 9 wherein the communications link comprises an RF communications link.

12. The system of claim 9 wherein the remote display monitor comprises a television.
13. The system of claim 9 wherein the remote display monitor comprises a computer display.
14. The system of claim 9 further including a transmitter for transmitting signals from the remote display monitor to the mobile telephone.
15. A method for displaying data from a mobile telephone on a remote display monitor, comprising the steps of:
receiving display data for display on the display of a mobile telephone at the mobile telephone;
forming a communications link between the mobile telephone and the remote display monitor;
transmitting the display data from the mobile telephone to the remote display monitor through the communications link;
entering at the mobile telephone a command for controlling display of the display data on the remote display monitor;
confirming receipt of the command from the remote display monitor to the mobile telephone; and
displaying the display data from the mobile telephone on the remote display monitor according to the command.
16. The method of claim 15 wherein the step of forming further includes the step of generating the communications link in response to a user generated input from the mobile telephone.
17. The method of claim 15 wherein the step of forming further includes the steps of:
scanning by the mobile telephone for a presence of a receiver associated with the display monitor;
forming the communications link upon detection of a presence of the receiver.
18. The method of claim 15 wherein the step of forming further comprises the step of forming an RF communications link.
19. The method of claim 15 wherein the step of forming further comprises the step of forming an IR communications link.
20. The method of claim 16 further including the step of transmitting a confirmation of formation of the communications link from the display monitor to the mobile telephone.

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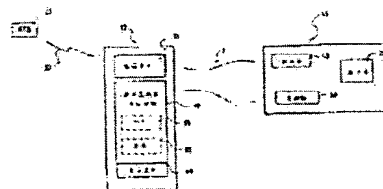
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[54]发明名称 用移动电话启动外部显示监视器的使用的装置

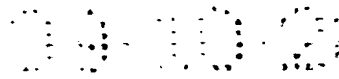
[57]摘要

公开了一种使得利用远程显示监视器(15)呈现来自移动电话(10)的显示数据的方法和装置。移动电话(10)包括显示监视器通信功能(40),使得在移动电话(10)与显示监视器(15)的接收机(45)之间生成通信链路(5)。该通信链路(5)启动与移动电话(10)相关的要在显示器(20)上显示的数字和电文数据的传输,从而在所述远程显示监视器(15)的较大屏幕上显示。用户可以选择地编程在所述显示监视器(15)上提供的的数据种类。



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视器，故用户可容易地在显示监视器屏幕上读出电文显示。

为了更完全的了解本发明，参照下面结合附图的详细描述，其中：

图 1 是起动用于显示移动电话信息的外部显示区的使用的装置的框图；

5 图 2 是表示通信链路的菜单选择起动和被显示数据的编程；

图 3 是表示移动电话与显示监视器之间的通信链路的手动连接的流程图；

图 4 是表示移动电话与显示监视器之间通信链路的自动连接的流程图。

10 现在参看附图，更具体地说，参看图 1，这显示有用于在移动电话 10 和显示监视器 15 之间产生通信链路 5 的装置，以便起动在显示监视器 15 的显示屏 20 上显示移动电话数据。基地收发信台 25 将通过下行链路 30 发送多种数据和消息给移动电话 10。这个信息可包括用于在移动电话 10 的电话显示器 35 上显示的字母数据。不幸的是，由于移动电话 10 的小尺寸，显示器 35 的这样的尺寸显示该数据使它很
15 难为一般用户观察。

该移动电话 10 包括显示监视器通信功能 40，通过监视器 15 起动通信链路 5 的产生。通过接收机 45 将移动电话 10 与显示监视器 15 之间的通信链路 5 与该显示监视器 15 联系。在一个实施例中，显示监视器 15 只需包括接收机 45。然而，在另一实施例中，该显示监视器
20 还可包括发射机 50，以起动通过通信链路 5 从显示监视器 15 返回到移动电话 10 的监视器通信功能 40 的数据发送。还可将发射机 50 和接收机 45 组合到单一的收发信机单元。

在移动电话 10 和显示监视器 15 之间产生的通信链路 5 最好包括
25 红外 (IR) 通信链路，因为现在许多电视设备已包括用于从诸如遥控器等装置接收 IR 信号的装置。然而，只要在移动电话 10 与显示监视器 15 之间以单向或双向产生通信链路 5，还可采用诸如 RF 通信等其它产生通信链路的装置

该监视器通信功能 40 还包括人工起动功能 55 或自动起动功能
30 60，以便起动通信链路 5 的建立。该人工起动功能 55 根据自移动电话 10 的用户输入，用显示监视器 15 产生通信链路 5。该自动起动功能 60 使得在移动电话 10 与显示监视器 15 之间自动地产生通信链路。

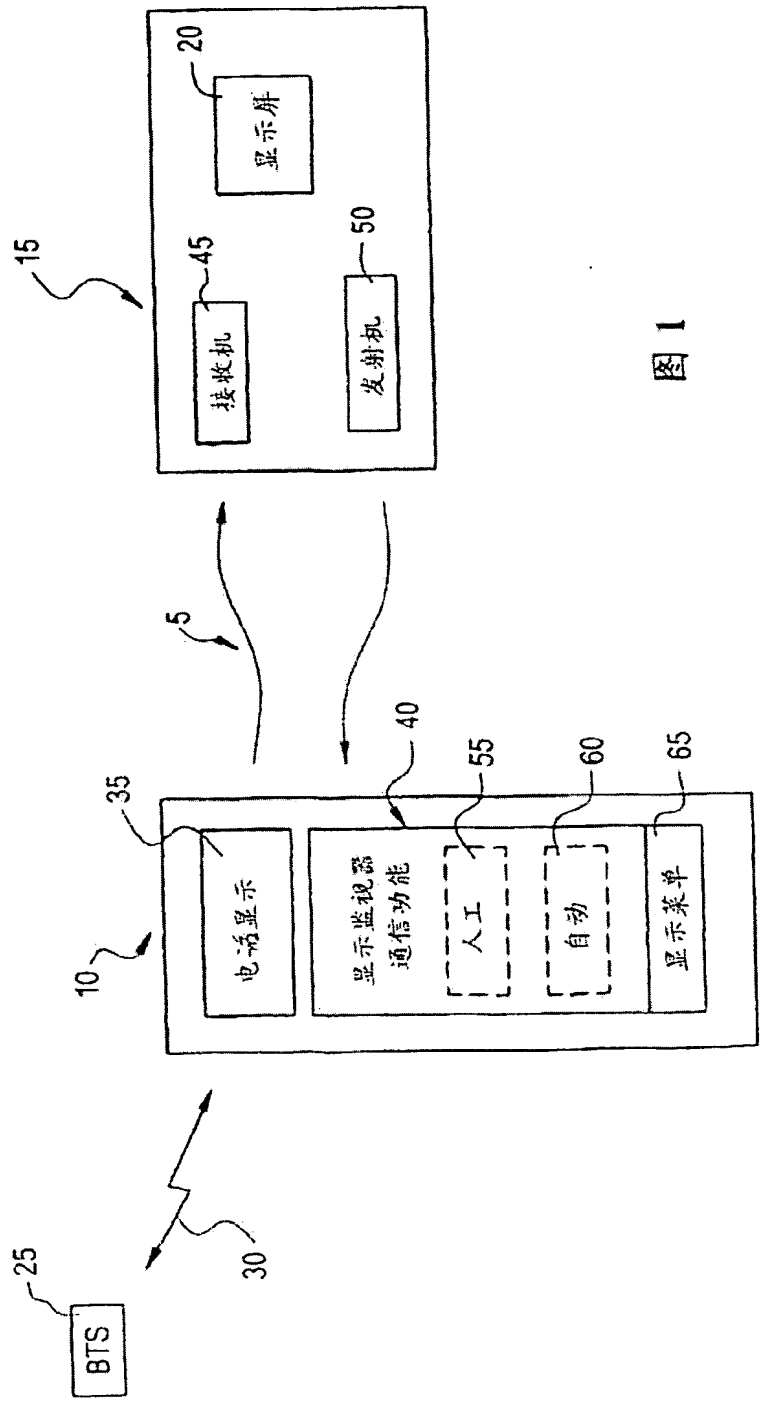


图 1